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EXAMINER	
NIU, XINNING	

ART UNIT	PAPER NUMBER
2828	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/526,286	FARRELL ET AL.	
	Examiner	Art Unit	
	Xinning(Tom) Niu	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *24-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09/29/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 24, 34, 35, 37, 43, 45 are rejected under 35 U.S.C. 102(b) as being anticipated by Anderson (6,658,033).

3. Regarding claim 24, Anderson discloses: obtaining a first set of measurement values for an output of the laser diode by increasing a first current/voltage through a range of values in a positive direction (reflector current R is increased from a start value to a maximum value and then falls back to said start value) (Figure 4, Col3, Lines 7-45); increasing a second control current/voltage by a step (phase current is increased and decreased as shown on the Y axis of figure 5) (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); obtaining a second set of measurement values for the output of the laser diode by decreasing the first control current/voltage through a range of values in a negative direction (curve 15 is the output from increasing the current, curve 16 is the output for decreasing current) (Figure 4, , Col3, Lines 7-45); increasing a second control current/voltage by a step (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); repeating steps (a) – (d) until a sufficient range of the second control current/voltage has been

used (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); identifying regions of hysteresis (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13).

4. Regarding claim 34, Anderson discloses: measured value is non linear (Figure 4, Col3, Lines 7-45).

5. Regarding claim 35, Anderson discloses: obtaining a first set of measurement values for an output of the laser diode by increasing a first current/voltage through a range of values in a positive direction (reflector current R is increased from a start value to a maximum value and then falls back to said start value) (Figure 4, Col3, Lines 7-45); increasing a second control current/voltage by a step (phase current is increased and decreased as shown on the Y axis of figure 5) (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); obtaining a second set of measurement values for the output of the laser diode by decreasing the first control current/voltage through a range of values in a negative direction (curve 15 is the output from increasing the current, curve 16 is the output for decreasing current) (Figure 4, , Col3, Lines 7-45); increasing a second control current/voltage by a step (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); repeating steps (a) – (d) until a sufficient range of the second control current/voltage has been used (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); identifying regions of hysteresis (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13).

6. Regarding claim 37, Anderson discloses: obtaining a first set of measurement values for an output of the laser diode by increasing a first current/voltage through a range of values in a positive direction (reflector current R is increased from a start value to a maximum value and then falls back to said start value) (Figure 4, Col3, Lines 7-45); increasing a second control current/voltage by a step (phase current is increased and decreased as shown on the Y axis of figure 5) (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); obtaining a second set of measurement values for the output of the laser diode by decreasing the first control current/voltage through a range of values in a negative direction (curve 15 is the output from increasing the current, curve 16 is the output for decreasing current) (Figure 4, , Col3, Lines 7-45); increasing a second control current/voltage by a step (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); repeating steps (a) – (d) until a sufficient range of the second control current/voltage has been used (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); identifying regions of hysteresis (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13).

7. Regarding claim 43, Anderson discloses: obtaining a first set of measurement values for an output of the laser diode by increasing a first current/voltage through a range of values in a positive direction (reflector current R is increased from a start value to a maximum value and then falls back to said start value) (Figure 4, Col3, Lines 7-45); increasing a second control current/voltage by a step (phase current is increased and decreased as shown on the Y axis of figure 5) (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); obtaining a second set of measurement values for the output of the laser

diode by decreasing the first control current/voltage through a range of values in a negative direction (curve 15 is the output from increasing the current, curve 16 is the output for decreasing current) (Figure 4, , Col3, Lines 7-45); increasing a second control current/voltage by a step (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); repeating steps (a) – (d) until a sufficient range of the second control current/voltage has been used (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); identifying regions of hysteresis (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13).

8. Regarding claim 45, Anderson discloses: obtaining a first set of measurement values for an output of the laser diode by increasing a first current/voltage through a range of values in a positive direction (reflector current R is increased from a start value to a maximum value and then falls back to said start value) (Figure 4, Col3, Lines 7-45); increasing a second control current/voltage by a step (phase current is increased and decreased as shown on the Y axis of figure 5) (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); obtaining a second set of measurement values for the output of the laser diode by decreasing the first control current/voltage through a range of values in a negative direction (curve 15 is the output from increasing the current, curve 16 is the output for decreasing current) (Figure 4, , Col3, Lines 7-45); increasing a second control current/voltage by a step (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); repeating steps (a) – (d) until a sufficient range of the second control current/voltage has been used (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); identifying regions of hysteresis

(Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13). The current source control, the meter, an increment control and a repetition control are inherent in the system of Anderson.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 25-33, 36, 38-42, 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (6,658,033) in view of Liou (4,835,779).

4. Regarding claims 25 and 36, Anderson discloses the claimed limitations except: a computer readable medium having stored therein instructions for causing a processor execute the method of claim 24. However, Liou discloses: a computer (61) (which inherently contains a computer readable medium) controlling a signal modifier (62)

which in turn controls a laser diode (Figure 5, Col 5, Lines 45-68). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson by using a computer to control and find regions of hysteresis in order to easily process the data.

5. Regarding claims 26 and 38, Anderson as modified discloses the claimed invention except: applying a Laplacian operator to the resultant data set. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson by applying a Laplacian operator to the resultant data set since it is easier to interpret the data in the frequency domain.

6. Regarding claims 27 and 39, Anderson discloses the claimed limitations except: photodiode used to obtain the output of the laser diode. Liou discloses: using a photodiode to obtain the output from a laser (Col 4, Lines 4-20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson by incorporating a photodiode in order to measure the output laser value.

7. Regarding claims 28 and 40, Anderson discloses the claimed limitations except: transmitting the output of the laser to a photodiode via an optical filter. Liou disclose: laser output transmitted to an optical filter (Figure 3, Col 5, Lines 25-41). It would have been obvious to one having ordinary skill in the art at the time the invention was made

to modify the laser device of Anderson by adding a wavelength filter between the laser and the photodiode in order to clean up output of the laser.

8. Regarding claims 29 and 30, Anderson discloses current is controlled in both the reflector and phase sections of the laser (see rejection for claim 24). Anderson does not disclose: measurement values are obtained by measuring the current on a section of the laser when voltage is used to control the laser output. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson by using voltage or current to control the laser and measuring voltage or current since voltage and current are interrelated values.

9. Regarding claim 31, Anderson as modified disclose: photodiode used to measure the output of the laser device. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson as modified by passing the signal outputted form the photodiode to the computer and analyze the data on a log scale in order to determine the single mode properties of the laser device.

10. Regarding claims 32 and 41, Anderson as modified discloses the claimed invention except: applying an erosion operator to the resultant data set. It would have been obvious to one having ordinary skill in the art at the time the invention was made

to interpret the by applying numerical operators in order to obtain the desired information.

11. Regarding claims 33 and 42, Anderson discloses the claimed limitations except: first and second current is increased in an increment that is below a predetermined threshold. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the increase in current, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,* 105 USPQ 233.

12. Regarding claim 44, Anderson discloses: obtaining a first set of measurement values for an output of the laser diode by increasing a first current/voltage through a range of values in a positive direction (reflector current R is increased from a start value to a maximum value and then falls back to said start value) (Figure 4, Col3, Lines 7-45); increasing a second control current/voltage by a step (phase current is increased and decreased as shown on the Y axis of figure 5) (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); obtaining a second set of measurement values for the output of the laser diode by decreasing the first control current/voltage through a range of values in a negative direction (curve 15 is the output from increasing the current, curve 16 is the output for decreasing current) (Figure 4, , Col3, Lines 7-45); increasing a second control current/voltage by a step (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); repeating

steps (a) – (d) until a sufficient range of the second control current/voltage has been used (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); identifying regions of hysteresis (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13). The current source control, the meter, an increment control and a repetition control are inherent in the system of Anderson. Anderson does not disclose: a computing apparatus for identifying regions of hysteresis in a resultant data set. However, Liou discloses: a computer (61) (which inherently contains a computer readable medium) controlling a signal modifier (62) which in turn controls a laser diode (Figure 5, Col 5, Lines 45-68). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson by using a computer to control and find regions of hysteresis in order to easily process the data.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xinning(Tom) Niu whose telephone number is 571-270-1437. The examiner can normally be reached on M-T, 7:30-5:00 EST, Alternate Fridays 7:30-4:00 ES.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Sun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Xinning Niu
01/17/2008